

## The Knowledge Bank at The Ohio State University

### Ohio State Engineer

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## On the Great Nieuw Amsterdam— The Largest Air Conditioning System Afloat!

IT WAS no simple task adapting air conditioning to the ocean liner. Carrier engineers worked for years to overcome what seemed to be unsurmountable obstacles. The corrosive effect of salt air and water, for example, made it necessary to introduce special metals for condensers—and drip-proof or water-tight construction for motors. New types of equipment were necessary to meet the restrictions imposed by low ceilings and limited space. Then there were problems of propeller vibration...the rolling of the ship...the rapid changes of outdoor weather conditions. And, above all, the necessity for absolute dependability.

Carrier engineers overcame these obstacles—overcame them so thoroughly that today, any ship built without air conditioning is considered obsolete before she is launched. The "Normandie," the

"Queen Mary," the "Mariposa" and dozens of smaller vessels all feature Carrier Air Conditioning for passengers' comfort. And now, with the maiden voyage of the "Nieuw Amsterdam" this spring, the largest air conditioning system afloat will be in operation.

Aboard the "Nieuw Amsterdam," passengers will enjoy true air conditioning at any season of the year. They'll be kept cool in hot weather by Carrier Centrifugal Refrigerating Machines providing 300 tons of cooling—or the equivalent of melting 600,000 pounds of ice each day. In cool weather they'll be warmed by gentle Carrier heating. And always,

they'll find perfect ventilation and circulation of clean, humidity-controlled air.

*Engineering* enabled Carrier to pioneer in the marine field—just as it enabled Carrier to pioneer in every other field of industry and commerce. And the opportunity for still greater engineering, and still greater pioneering are as great or *greater* today than ever before. Youth is no obstacle—at Carrier, recognition is gained by accomplishments, not by age alone. And the young engineer is encouraged to use his abilities to their best advantage—whether they be adapted to experimental, development or installation work in Carrier's world-wide organization.

★ ★ ★

During 1937, Carrier trained 300 recent graduates from leading engineering schools in every section of the country. Carrier needs more men. If you had a good school record, and are interested in the world's most fascinating and fastest-growing industry, write us.

**Carrier**  
**Air Conditioning**

**CARRIER CORPORATION, SYRACUSE, N. Y.**

AN ORGANIZATION OF ENGINEERS



# G-E Campus News

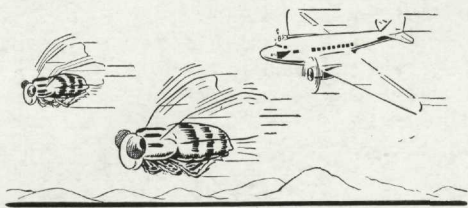


## DEW-POINT POTENTIOMETER

**D**EW on the grass may be fine for the farmers and an indication of fair weather, but it has no place in metal heat-treating furnaces. Moisture in the atmosphere in furnaces causes corrosion on the metal, thus decreasing the size of the part. Because it is impossible to tell the amount of moisture in such a furnace by sticking your hand into it, General Electric engineers have developed a dew-point potentiometer to do this job, and do it accurately.

The potentiometer consists of a metallic mirror located in a small chamber into which gas from the furnace is passed and condensed on the mirror. By means of a thermocouple, a balancing circuit, and a direct-reading meter, the weight of water vapor per cubic foot of gas may be derived. Thus the furnace operator can tell if the furnace atmosphere is suitable for the treatment of the metal.

Many of the G-E developmental engineers working on this and similar apparatus are former Test men. The General Electric Test Course augments the theoretical training received by engineering graduates, giving them a practical training in industry.

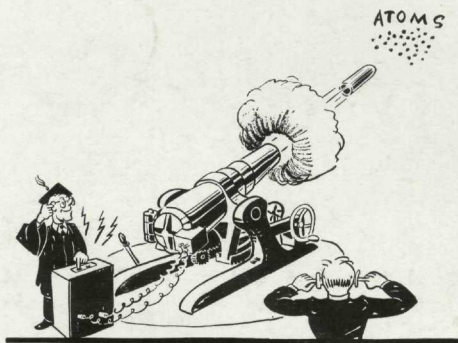


## SPEEDY FLIES

**T**HERE are many legends of nature which have remained for many years, eventually being refuted by naturalists, but one which has persisted up until a few weeks ago is that of the phenomenal speed of the deer botfly. While man plods along at a speed of 400 miles per hour in his airplane, one

entomologist calculated the speed of the deer botfly to be 800 miles per hour. Digressing from his usual type of experiments, Dr. Irving Langmuir, Nobel Prize winner in the General Electric Research Laboratory, exploded this entomological myth by means of a series of tests.

Using a piece of solder the size and shape of a deer botfly, Dr. Langmuir showed that if this insect traveled at 800 miles per hour it would encounter a wind pressure of 8 pounds per square inch—enough to crush it, and that maintaining such a velocity would require a power consumption of one-half horsepower—a good deal for a fly. He also demonstrated that the insect would be invisible at speeds in excess of 60 miles per hour, yet the entomologist estimated the speed of the fly at 400 yards per second because he saw a brown blur pass by his eyes. Finally the calculations showed that if the fly, while traveling at this speed, struck a human being, it would penetrate the skin with a force of four tons per square inch and bury itself deep in the flesh.



## BOMBARDING ATOMS

**T**he modern miracles of aviation, television, and World's Fairs are taken quite calmly in this twentieth century of progress. But it is a different matter when scientists start snapping the whip with ions to smash ultramicroscopic particles called atoms into even more minute portions. And that's just what scientists are doing over at Harvard University.

Using a machine called a cyclotron, devised by Prof. Lawrence of the University of California, the Harvard physicists are bombarding atoms by accelerating ions to a tremendous speed and shooting them out through a hole in the side of the machine. But people are talking about this barrage of ionic ammunition because the results have proven successful in the treatment of cancer.

This is the third of such atom-smashing machines for which the General Electric Company has furnished parts. Even in such academic and highly specialized fields, Test men are called upon to make their contributions.

# GENERAL ELECTRIC